# CURRICULUM VITAE

**Name: Matthew Philip Hoffman**

**Education:**

| | |
|---|---|
| 1983-1986 | B.D.S., University of Otago School of Dentistry Dunedin, New Zealand, Awarded with Credit |
| 1991 | M.S., Microbiology and Immunology, University of Rochester School of Medicine and Dentistry, Rochester, NY |
| 1994 | Ph.D., Microbiology and Immunology, University of Rochester School of Medicine and Dentistry, Rochester, NY |

**Brief Chronology of Employment:**

| | |
|---|---|
| 1987 | Dental House Surgeon (1st Year) Wellington Hospital Board, Wellington, NZ |
| 1988 | Dental House Surgeon (2nd Year) Wellington Hospital Board, Wellington, NZ |
| 1989 | Research Assistant, Dental Research Unit, NZ Medical Research Council, Wellington, NZ |
| 1994-1997 | Visiting Fellow, Cell Biology Section, Laboratory of Developmental Biology, NIDR, NIH |
| 1997-2000 | Visiting Associate, Cell Biology Section, Craniofacial Developmental Biology and Regeneration Branch, NIDCR, NIH |
| 2000-2004 | Staff Scientist, Cell Biology Section, Craniofacial Developmental Biology and Regeneration Branch, NIDCR, NIH |
| 2004 | Chief, Matrix and Morphogenesis Unit, Craniofacial Developmental Biology and Regeneration Branch, NIDCR, NIH |

**Honors and Awards:**

J. Lee-Jones Prize in Preclinical Dentistry, University of Otago, 1983

O.V. Davies Memorial Prize in Basic Dental Surgery, University of Otago, 1984

Leask Memorial Medal for Clinical Dentistry, University of Otago, 1986

Dental Research Foundation Prize, New Zealand Dental Research Foundation, 1986

Fulbright Travel Scholarship, NZ/US Fulbright Commission, 1989-1993

NZDA. Award for Research, New Zealand Dental Association, 1990

NIDR, NIH Cash Award for Innovative Research ($2500), 1995

Poster Award at the 3rd Pan Pacific Connective Tissue Societies Symposium, 1996

NIDR, NIH Cash Award for Research Excellence ($2500), 1996

NASA award to fund the project “Salivary gland cell differentiation in the RWV Bioreactor.” $64,000/year for 2 years, 1996-1997

NIDCR, NIH Cash Award for Research Excellence ($3000), 1998

NIDCR, NIH Royalty Cash Award for Research Initiative ($2500), 1999

NIDCR, NIH Cash Award for Excellence in Mentoring ($3000), 2002

NIDCR Travel Award ($500), 2002

**Editorial Responsibilities:**

Biotechnic and Histochemistry Journal, 2003
Developmental Dynamics Journal, 2004

**Invited Presentations (selected):**

1997 The role of extracellular matrix in salivary gland acinar cell differentiation. Gordon Conference on Salivary Glands and Saliva. February 23-28, Ventura CA

1997 Basement membranes in organ development. August 20, Deans Lecture, Wellington School of Medicine, Otago University, Wellington, New Zealand

1997 The role of laminin in cell differentiation. August 21, Malaghan Institute Research Seminar, Wellington, New Zealand

1997 Pathways to organogenesis. August 28, Terry Cutress Symposium: Interactions between epidemiology and basic research in oral health. Dunedin, New Zealand

1997 Laminin G-domain synthetic peptides bind to syndecans and promote acinar-like development of a human submandibular gland (HSG) cell line. September 17, RCOB Seminar, University of Pennsylvania, Philadelphia, USA

1997 Laminin-1 and laminin-2 alpha chain peptides are involved in salivary gland cell differentiation via a syndecan-1 surface receptor. December 13, Three Dimensional Tissue Culture: A new dynamic in cell biology. (Special Interest Subgroup meeting) ASCB 37th Annual meeting, Washington, D.C.

1998 The Role of Laminin and Syndecans in Salivary Gland Cell Differentiation. February 3, Dental Research Seminar, Oregon Health Sciences University, Portland, OR

1998 Growth Factor-Matrix Synergy in Cell Differentiation. NIH Research Festival, October 7-9

1998 Basement Membranes: Structure, function and role in development
The role of basement membrane components in salivary acinar cell differentiation in vitro
Two invited lectures on Extracellular Matrix, at the VI research Meeting of the School of Dentistry at the University of Sao Paulo, Brazil. October 26–28

1999 Extracellular Matrix/Growth Factor Synergy Promotes HSG Cell Acinar Differentiation. Gordon Conference on Salivary Glands and Saliva. February 21-26, Ventura CA

1999 Growth factor/matrix synergy in salivary acinar cell differentiation. Seminar, Pulmonary Critical Care Medicine Branch, NHLBI, NIH, Bethesda MD

1999 PKC and MAP kinase signaling regulate the amylase promoter activity in a human salivary cell line. Seminar, Clinical Research Branch, NIDCR, NIH, May 24

2000 Gene expression profiles of developing mouse salivary glands. 16$^{th}$ International Conference on Oral Biology. Saliva in Health and Disease. April 9-12, Chantilly VA.

2001 Array Analysis of Salivary Gland Development: Where do we go from here? Gordon Conference on Salivary Glands and Saliva. February 11-16, Ventura CA.

2001 Functional Genomics and Salivary Gland Development. Student Research Group Annual Research Symposium. Baltimore College of Dental Surgery, UMD Dental School. April 18, Baltimore MD.

2001 Fibroblast growth factor receptor 2 (IIIb) regulates branching morphogenesis of developing mouse submandibular glands. International Association of Dental Research Symposium on Repair of Salivary Glands. June 27-30, Chiba, Japan.

2001 Invited for 2 week Mini-Sabbatical to Department of Oral Pathology, November 16-December 2, Sao Paulo, Brazil.

2001 Fibroblast growth factor receptors and laminin 10 are important regulators of branching morphogenesis of embryonic salivary glands. The Brazilian Society for Cell Biology, Symposium on Cytoskeleton and Cell Differentiation. November 29-30. Sao Paulo, Brazil

2001 Career Paths in Dentistry. 38th Annual Dental Students Conference on Research. March 16-19. NIDCR, NIH, Bethesda MD.

2002 Branching morphogenesis of mouse salivary glands: regulation by growth factors and the basement membrane. Biological Stain Commission, Annual Meeting, June 7-8. Rockville, MD.

2003 FGF7 and FGF10 regulate branching morphogenesis of developing mouse submandibular glands in vitro through FGFR2b. February 24, Branch Seminar. Gene Therapy and Therapeutics Branch, NIDCR, NIH, Bethesda, MD.

2003 Branching morphogenesis of mouse submandibular glands is regulated by FGF signaling. Seminar, Laboratory of Cell Biology, NHBLI, NIH. April 22.

2003 Branching morphogenesis of mouse submandibular glands is regulated by Matrix Metalloproteinases and Fibroblast Growth Factor signaling. Department of Cell and Molecular Biology, Distinguished Scientist Seminar Series, Boston University Dental School. May 8.

2003 Matrix Metalloproteinase (MMP) Activity Is Required for Branching Morphogenesis of Developing Mouse Submandibular Salivary Glands. Pan Pacific Connective Tissues Symposium. Yamaguchi, Japan, June 7.

2003 FGF7 and FGF10 Regulate Branching Morphogenesis of Developing Mouse Submandibular Glands *in vitro* through FGFR2b and FGFR1b. International Association for Dental Research, Goteborg, Sweden. June 27.

2003 Branching morphogenesis is regulated by Fibroblast Growth Factor signaling and Matrix Metalloproteinases activity. Shriners Hospital for Children-Portland Research Center. Monday Seminar Series. August 18.

2004. FGFs and MMPs regulate branching morphogenesis of mouse submandibular glands, Branch Seminar, LCCTP Lab, NCI, NIH. March 5.

2004 FGF7 and FGF10 signaling through FGFR2b regulates ex vivo mouse submandibular gland branching morphogenesis through MMP-dependent mechanisms. Keystone Meeting on Signaling in Vertebrate Organogenesis. Feb 26-Mar 2, 2004.

2004 FGF and extracellular matrix regulation of submandibular gland branching morphogenesis. OPCB Seminar, NIDCR, NIH. November 04.

2005 An Overview of Functional Genomic Approaches in Salivary Gland Research. Keynote address in the Salivary Gland Development and Regeneration Symposium, International Association of Dental Research Meeting, Baltimore MD, March 10.

2005 Salivary gland development: Implications for therapeutic gland regeneration Keynote speaker for Science Day, Predoctoral Research Program at Boston University School of Dental Medicine, Boston MA. March 24.

2005 Keynote Lecture on Salivary Gland Development, in a session on Structure and Functions of Salivary Glands. 7th European Symposium on Saliva, Egmond aan Zee, Netherlands, May 11.

2005 Salivary gland development: Implications for therapeutic gland regeneration. Oral Health Sciences Seminar, University of Michigan School of Dentistry, October 13.

2005 Salivary Gland Branching Morphogenesis. Focus Group on Tube and Branching Morphogenesis Seminar, Weill Medical College, Cornell University. November 10.

2005 FGF10 function during submandibular gland branching morphogenesis, in a session on Growth Factors, 6th Pan Pacific Connective Tissue Socieities Symposium, Hawaii December 2.

**BIBLIOGRAPHY**

**Peer-Reviewed Articles:**


1. Hoffman, M.P., Cutress, T.W., and Tomiki, S. Prevalence of developmental defects of enamel in children in the Kingdom of Tonga. *N Z Dent. J.* 84: 7-10, 1988.
2. Hoffman, M.P., Cutress, T.W., and Crooks, M.C. Some epidemiological and scanning electron microscopic features of crazing of the dental enamel of Polynesians. *N Z Dent. J.* 85: 86-90, 1989.
3. Sissons, C.H., Cutress, T.W., Hoffman M.P., and Wakefield. J.St.J. A multi-station dental plaque microcosm (Artificial mouth) for the study of plaque growth, metabolism, pH, and mineralization. *J. Dent. Res.* 70(11): 1409-1416, 1991.
4. Vasilas, A., Molina, L., Hoffman, M.P., and Haidaris, C.G. The influence of morphological variation on Candida albicans adhesion to denture acrylic in vitro. *Archives of Oral Biology* 37: 613-622, 1992.
5. Hoffman, M.P. and Haidaris, C.G. Analysis of Candida albicans adhesion to salivary mucin. *Infection and Immunity* 61: 1940-1949, 1993.
6. Hoffman, M.P., and Haidaris, C.G. Identification and characterization of Candida albicans binding proteoglycan from rat submandibular salivary glands. *Infection and Immunity* 62: 828-36, 1994.
7. Hoffman, M.P., Kibby, M.C., Letterio, J.J., and Kleinman, H.K. Role of laminin-1 and TGF-3 in acinar differentiation of a human submandibular gland cell line (HSG). *J. Cell Sci.* 109: 2013-2021, 1996.
8. Webber, M.M., Bello, D., Kleinman H.K., and Hoffman, M.P. Acinar differentiation by non-malignant immortalized human prostatic epithelial cells and its loss by malignant cells. *Carcinogenesis* 18: 1225-1231, 1997.
9. Nomizu, M., Kuratomi, Y., Song, S-Y., Ponce, M.L., Hoffman, M.P., Powell, S.K., Miyoshi, K., Otaka, A., Kleinman, H.K., and Yamada,Y. Identification of cell binding sequences in mouse laminin γ1 chain by systematic peptide screening. *J. Biol. Chem.* 272(51): 32198-32205, 1997.
10. Zheng, C-Y., Hoffman, M.P., McMillan, T.S., Kleinman, H.K., and O'Connell, B.C. Amylase and kallikrein promoter activities are indicators of salivary gland cell differentiation in vitro. *J. Cell Physiol.* 177: 628-635, 1998.
11. Hoffman, M.P., Nomizu, M., Roque, E., Lee, S., Jung, D., Yamada, Y., and Kleinman, H.K. Laminin-1 and laminin-2 G domain synthetic peptides bind syndecan-1 and are important for acinar formation of a human submandibular gland (HSG) cell line. *J. Biol. Chem.* 273(44): 28633-28641, 1998.
12. Nomizu, M., Kuratomi, Y., Malinda, K.M., Song, S-Y., Miyoshi, K., Otaka, A., Powell, S.K., Hoffman, M.P., Kleinman, H.K., and Yamada, Y. Cell binding sequences in mouse laminin α1 chain. *J. Biol. Chem.* 273(46): 32491-32499, 1998.

13. Ponce, L.M., Nomizu, M., Delgado, M.C., Kuratomi, Y., Hoffman, M.P., Powell, S.K., Yamada, Y., Kleinman, H.K., and Malinda, K.M. Identification of endothelial cell binding sites on mouse laminin γ1 chain. *Circ. Res.* 84: 688-694, 1999.

14. Nielsen, P.K., Gho, Y.S., Hoffman, M.P., Watanabe, H., Makino, M., Nomizu, M., and Yamada, Y. Identification of a major heparin and cell binding site in the G4 module of the laminin α5 chain. *J. Biol. Chem.* 275(19): 14517-14523, 2000.

15. Nomizu, M., Kuratomi, Y., Ponce, M.L., Song, S.-Y., Miyoshi, K., Otaka, A., Powell, S.K., Hoffman, M.P., Kleinman, H.K., and Yamada, Y. Cell adhesive sequences in mouse laminin β1 chain. *Arch. Biochem. Biophys.* 378(2): 311-320, 2000.

16. Jung, D.W., Hecht, D., Ho, S.W., O'Connell, B.C., Kleinman, H.K., and Hoffman, M.P. PKC and MAP kinase signaling pathways regulate the amylase promoter activity in a human salivary cell line. *J. Cell. Physiol.* 185: 215-225, 2000.

17. Hoffman, M.P., Engbring, J.A., Nielsen, P.K. Vargas, J., Steinberg, Z., Karmand, A.J., Nomizu, M., Yamada, Y., and Kleinman, H.K. Cell type-specific differences in glycosaminoglycans modulate the biological activity of a heparin-binding peptide (RKRLQVQLSIRT) from the G domain of the laminin α1 chain. *J. Biol. Chem.* 276(25): 22077-85, 2001.

18. Engbring, J.A., Hoffman, M.P., Karmand, A.J., and Kleinman, H.K. The B16F10 cell receptor for a metastasis-promoting site on laminin-1 is a heparan sulfate/chondroitin sulfate-containing proteoglycan. *Cancer Res*. 62(12): 3549-54, 2002.

19. Hecht, D., Jung, D., Prabhu, V.V., Munson, P.J., Hoffman, M.P., and Kleinman, H.K. Metallothionein promotes laminin-1-induced acinar differentiation in vitro and reduces tumor growth in vivo. *Cancer Res*. 62(18): 5370-4, 2002.

20. Hoffman, M.P., Kidder, B.L., Steinberg, Z.L., Lakhani, S., Ho, S., Kleinman, H.K., and Larsen, M. Gene expression profiles of mouse submandibular gland development: FGFR1 regulates branching morphogenesis in vitro through BMP- and FGF-dependent mechanisms. *Development* 129(24): 5767-78, 2002.

21. Larsen, M., Hoffman, M.P., Sakai, T., Neibaur, J.C., Mitchell, J.M., and Yamada, K.M. Role of PI 3-kinase and PIP3 in submandibular gland branching morphogenesis. *Dev. Biology* 255: 178-191, 2003.

22. Suzuki, N., Ichikawa, N., Kasai, S., Yamada, M., Nishi, N., Morioka, H., Yamashita, H., Kitagawa, Y., Hoffman, M.P., and Nomizu, M. Syndecan binding sites on the laminin alpha-1 chain G domain. *Biochemistry* 42: 12625-33, 2003.

23. Martinerie, L.M., Thibout, C., Hoffman, M.P., Verrechia, F., Le Bouc, Y., Mauviel, A., and Kleinman, H.K. NOVH increases MMP3 expression and cell migration in glioblastoma cells via a PDGFR-α dependent mechanism. *FASEB*, in press, 2003.

24. Freitas VM, Scheremeta B, Hoffman MP, Jaeger RG. Laminin-1 and SIKVAV a laminin-1-derived peptide, regulate the morphology and protease activity of a human salivary gland adenoid cystic carcinoma cell line. Oral Oncol. May;40(5):483-9, 2004.

25. TRPA1 is a candidate for the mechanosensitive transduction channel of vertebrate hair cells. D. P. Corey, J. García-Añoveros, J. R. Holt, K. Y. Kwan, S. Y. Lin, M. A. Vollrath, A. Amalfitano, E. L.-M. Cheung, B. H. Derfler, A. Duggan, G. S. G. Géléoc, P. A. Gray, M. P. Hoffman, H. L. Rehm, D. Tamasauskas and D.S. Zhang . *Nature* 432: 723-30, 2004.

26. FGFR2b signaling regulates ex vivo submandibular gland epithelial cell proliferation and branching morphogenesis. Z. Steinberg, C. Myers, V. M. Heim, C. A. Lathrop, I.T. Rebusitini, J. S Stewart, M. Larsen and M. P. Hoffman. *Development.*132: 1223-1234, 2005.
27. Laminin Alpha5 Chain Metastasis- and Angiogenesis-Inhibiting Peptide Blocks FGF2 Signaling by Binding to the Heparan Sulfate Chains of CD44. S. Hibino, M. Shibuya, M. P. Hoffman, J. A. Engbring, M. Mochizuki, S. Kudoh, M. Nomizu, and H. K. Kleinman. *Cancer Res.*65 : (22) 10494-501, 2005.
28. Laminin α5 regulates dental epithelium growth and differentiation and is essential for the size and shape of the tooth. S. Fukumoto, J.H. Miner, H. Ida, E. Fukumoto, K. Yuasa, H. Miyazaki, M.P. Hoffman, Y. Yamada. *JBC* Dec 19, 2005 *in press.*

**Submitted:**

1. Laminin α5 regulates FGFR expression and mouse submandibular gland development. I. T. Rebustini, V. N. Patel, J. S. Stewart, J. H. Miner, E. Georges-Labouesse, and M. P. Hoffman. submitted
2. Genes related to the maintenance of inflammatory lesions in Giant-Cell Arteritis. Cid M, Hoffman M. P, Hernandez-Rodriguez J, Segarra M, Elkin M, Sanchez M, Garcia-Martinez A, Pla-Campo M, Urbano-Marquez A, Grau JM, Kleinman HK. submitted.

**Chapters and Reviews:**

1. Hoffman, M.P. Pathways to organogenesis: from coconut crazed teeth in Tonga to salivary glands in space. *N Z Dent. J.* 94(417): 117-8, 1998.
2. Kleinman, H.K., Philp, D., and Hoffman, M.P. Role of the extracellular matrix in morphogenesis. *Current Opinions in Biotechnology*, in press, 2003.
3. Role of the Extracellular Matrix in Morphogenesis H.K. Kleinman, D. Philp, and M. P. Hoffman. *Current Opinions in Biotechnology*. (14(5):526-32), 2003.